



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:

OSB2000-0176

August 17, 2000

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Formal Consultation on Adult Salmon Trap Construction and Operation (Corps No. 2000-00552), South Umpqua River, Douglas County, Oregon

Dear Mr. Evans:

This letter represents the National Marine Fisheries Service's (NMFS) biological opinion (Opinion), pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), that the effects of the Oregon Department of Fish and Wildlife's (ODFW) proposed construction and operation of a trap intended to capture fall chinook salmon, together with cumulative effects and the effects of the environmental baseline, are not likely to jeopardize the continued existence of Oregon Coast (OC) coho salmon. This letter also authorizes incidental take associated with the subject activities.

BACKGROUND

This consultation is between NMFS and the U.S. Army Corps of Engineers (COE), a Federal agency, on their permitting ODFW to conduct work under Section 404 of the Clean Water Act, and is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR 402. The COE determined that OC coho salmon may be adversely affected by the proposed action and initiated consultation with the NMFS on the effects of the proposed action in a July 21, 2000 letter. ODFW staff provided substantial information to NMFS staff on the proposed action and its potential effects on OC coho salmon. While the COE does not play a role in the operation of the proposed trap, the NMFS considers the operation of the trap to be an activity interrelated to the action that would be authorized by the COE's proposed 404 permit to the ODFW.

PROPOSED ACTION

ODFW is proposing to place and manipulate material within the river channel to facilitate the construction and operation of a seasonal floating weir trap which would be used to capture adult fall chinook salmon on their upstream spawning migration at a riffle just downstream of the Happy Valley boat ramp on the South Umpqua River mile 18.1 (Umpqua River mile 129.8), Green, Douglas



County, Oregon. Portions of the trap construction regulated by the COE would be performed in mid to late August of 2000 and succeeding years, during the ODFW in-water work window. ODFW proposes to reconstruct the trap in each of the next five years during the in-water work window.

The trap would be constructed of a series of floating polyvinyl chloride (PVC) pipe panels attached with steel cable at the upstream end to a series of railroad track pieces which are currently on the river bottom or are slightly buried in the alluvium at the site. With the upstream ends of the panels secured to the river bottom, the downstream ends of the buoyant panels would extend several feet above the water's surface, thereby preventing large fish from swimming upstream or jumping over the overhanging downstream end of the trap. The PVC panels would span the wetted width of the river, except for two gaps (one at the center of the trap and one on the right bank) which would allow upstream migrating fish to pass through a finger weir or a metal fyke into holding areas enclosed in PVC pickets. The holding areas would be about 20 by 20-30 feet in area and 2 to 3 feet deep. The pickets are constructed in panels and would be secured to hand-driven steel T-posts. Spacing between the PVC pipes in the trap panels and pickets would be about 1.25 inches, so fish thinner than this width should be able to swim through the PVC panels or pickets.

ODFW constructed a picket-weir trap at the proposed site in 1998 and a trap of similar design to the one here proposed in 1999, but found that the effectiveness of the trap was impaired at low river flow volume in 1999 because chinook salmon had difficulty finding the trap entrances in the shallow water. To increase the effectiveness and safety of the trap, ODFW proposes to manipulate alluvium and to place eight boulders in the stream channel. A total of about 60 cubic yards (cy) of riverbed material would be excavated to form a fish holding area about 3 feet in depth and about 170 linear feet of shallow (< 1 foot of excavation) approach and guidance channels, while a total of about 80 cy of riverbed material would be placed in the channel to form a 120-foot berm and to otherwise guide fish to or contain fish within the trap. In addition, eight 1-cy boulders would be brought in from off-site and placed in clusters to guide fish and water. Instream alluvium manipulation and boulder placement is expected to take approximately 4 hours over two days. Fill and removal activities would be performed with an excavator or other clean and leak-free heavy equipment, while T-posts would be driven by hand. The railroad track and boulders would remain in the stream channel from year to year, but the panels and pickets would be removed from the site annually. ODFW expects the alluvium berms, channels, etc. to be smoothed and rearranged during winter high flows, so the excavation and fill activities described above are proposed to be repeated annually.

ODFW would install the floating weir panels and the pickets for the trap just prior to the upstream migration of fall chinook salmon, typically in late September or early October. The trap would be operated through early November, or until high flows force the seasonal removal of the floating panels and pickets. Although fall chinook salmon are ODFW's target species, the trap is likely to capture other fish, including adult OC coho salmon. The trap would be attended 24 hours per day and fished a minimum of twice per day. Any OC coho salmon captured in the trap would be hand-netted by ODFW biologists (without crowding) with a smooth-meshed dipnet, and would be immediately (within 2-3 seconds) returned to the river upstream of the trap without examination or further handling.

BIOLOGICAL INFORMATION AND CRITICAL HABITAT

In Oregon coastal streams north of Cape Blanco, including the South Umpqua River, the NMFS listed OC coho salmon under the ESA as threatened on August 10, 1998 (63 FR 42587). Critical habitat for this species was designated on February 16, 2000 (65 FR 7764). OC coho salmon are widely distributed in the South Umpqua River drainage, typically spawning and rearing in tributaries of the river, rather than in the mainstem. Adult OC coho salmon likely would pass the Happy Valley trap site during late October through early December, during their spawning migration. Juvenile coho salmon smolts from the South Umpqua River drainage would outmigrate past the trap site in March through early June to rear in the Pacific Ocean. OC coho salmon fry, parr, and pre-smolts have the potential to rear in nearly all accessible streams in the South Umpqua River drainage, including the mainstem, during periods when water temperature and other water quality factors are suitable. References for further background on listing status, biological information and critical habitat elements can be found in the Federal Register notices listed above and in Weitkamp *et al.* (1995). ODFW (2000) estimated annual wild coho salmon spawner abundance in the South Umpqua drainage in 1993-1999 at about 2,000 fish, which is about 6% of the estimated mean annual spawner abundance in the OC coho salmon ESU for this period.

The action area is defined by NMFS regulations (50 CFR Part 402) as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” The proposed action area includes the trap site and other designated critical habitat in the South Umpqua River within a few hundred yards downstream of the site. This area serves as a migratory corridor for OC coho salmon adults and smolts, and likely provides rearing habitat for juvenile OC coho salmon during portions of the year. Essential features of the adult and juvenile migratory corridor and juvenile rearing habitat for OC coho salmon are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions (50 CFR Part 226). The essential feature this proposed project may affect is riparian vegetation.

EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by its implementing regulations (50 CFR Part 402). When NMFS issues a conference or biological opinion, it uses the best scientific and commercial data available to separately determine whether a proposed Federal action is likely to: (1) Jeopardize the continued existence of a proposed, listed, or candidate species, and/or (2) destroy or adversely modify a proposed or listed species' critical habitat. This analysis involves the following steps: (A) Define the biological requirements of the species; (B) evaluate the environmental baseline relative to the species' current status; (C) determine the effects of the proposed or continuing action on the species; (D) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and

recovery specific to other life stages; and (E) identify reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the species.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for adult and juvenile migration and rearing of the listed salmon under the existing environmental baseline.

A. Biological Requirements

The first step in the method the NMFS uses in applying the ESA standards of Section 7(a)(2) to Pacific salmonids is to define the species' biological requirements that are most relevant to each consultation. The relevant biological requirements are those necessary for the listed and proposed species to survive and recover to a naturally reproducing population level at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

The NMFS finds that these biological requirements are best expressed in terms of environmental factors that define properly functioning freshwater aquatic habitat necessary for the survival and recovery of the listed species. Individual environmental factors include water quality, habitat access, physical habitat elements, river channel condition, and hydrology. These are measurable variables, with properly functioning values estimated using the best available information as those necessary for sufficient prespawning survival and distribution, spawning success, egg-to-smolt survival, smolt emigration survival and timing, and smolt condition to allow the long-term survival of the species. Properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are necessary for the survival and recovery of these species.

For this consultation, the most relevant biological requirements are characteristics that function to support successful adult migration. The current status of the listed and proposed species, based upon their risk of extinction, has not significantly improved since the species was listed.

B. Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area covered by this Opinion includes the project site at South Umpqua River mile 18.1 and OC coho salmon critical habitat within a few hundred yards downstream of the site.

The biological requirements of the listed and proposed species are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in the environmental conditions they experience over those currently available under the environmental baseline. Any further degradation of these conditions would have a significant impact due to the amount of risk they presently face under the environmental baseline.

ANALYSIS OF EFFECTS

A. Effects of Proposed Action

The NMFS expects that individual adult OC coho salmon may be adversely affected by the operation of the trap, but does not believe that the construction or operation of the trap is likely to directly adversely affect other life-stages of the species. The NMFS also expects that effects of the annual construction of the trap will tend to maintain the habitat elements at the subject site over the long term (greater than one year). In the short term, temporary increases in turbidity are expected.

I. Trap Operation. During operation of the trap, large salmonids (those more than about 1.25 inches thick) should not be able to pass upstream through the trap, except into the trap holding areas. As described above, fall chinook salmon are the ODFW's target species, while OC coho salmon (and a few steelhead) may be incidentally captured in the trap. ODFW believes that it can determine the species of individual fish without first netting the fish, and so would net/handle OC coho salmon only to remove these fish from the trap and to place them in the river (pers. comm. Tom Loynes, ODFW, 7/19/00). Trapped OC coho salmon would experience some level of stress from being confined in the holding areas and from netting and release. Stress approaching or exceeding the physiological tolerance limits of individual fish can impair reproductive success, growth, resistance to infectious diseases, and general survival (Wedemeyer *et al.* 1990). Mechanical injury is also possible during holding, netting, and release.

While it is possible that trapped OC coho salmon may suffer some level of injury and/or stress during holding, netting, and release and that some of these fish would be injured or stressed to the point where survival or reproductive capability is impaired, it seems unlikely that this will occur to more than a few individuals. ODFW captured 78 adult OC coho salmon in the Happy Valley trap in 1998 (66 in the last 12 days of trap operation) and 60 in 1999 (40 on the last day of trap operation; pers. comm., Tom Loynes, ODFW, 7/26/00). The number of coho salmon incidentally trapped in 1998 and 1999 amounted to about 3.1 and 2.5% of the estimated wild coho spawner abundance in the South Umpqua River watershed in those years (ODFW 2000). About one-third of the coho salmon captured in the

Happy Valley trap in 1998 were of hatchery origin proportion (pers. comm., Tom Loynes, ODFW, 7/26/00).

The trap would be fished twice daily (at a minimum) and the maximum number of adult chinook and coho salmon confined together during periods when coho salmon were present in 1999 was no more than about 20 fish in either of the holding areas (pers. comm., Tom Loynes, ODFW, 7/25/00). The observed maximum holding area density has therefore been no more than about one adult salmon per 20 square feet for up to 12 hours, which is well within the range of density likely encountered by these fish in natural pools during their upstream migration. Netting and handling time would be minimal as ODFW personnel would be able to identify most coho salmon individuals without crowding and before netting, so only a few seconds of stress would be inflicted upon the fish during transfer between the holding area and the river. Further, the adult salmon would be close enough to spawning and in cold enough water that fungal or bacterial infections from handling seems unlikely to be a major factor. Survival beyond spawning is not a relevant factor for semelparous species such as coho salmon.

Upstream or downstream-migrating coho salmon smaller than 1.25 inches thick should be able to pass through the trap panels or pickets by swimming between the bars or pickets. Some fish of a slightly greater than 1.25-inch girth, however, may be able to pass only partway through the weir bars, and some may become caught between the bars, especially at the gills. Although the 1.25-inch spacing between bars and pickets on the trap should allow juvenile salmonids to pass downstream through the trap safely, it is possible that accumulation of debris on trap components may sometimes create hydraulic conditions where small fish may become impinged. Finally, it is also possible that some upstream migrating adult coho salmon may be unable to find the entrance to the trap holding area or may refuse to enter the trap holding area, and may be delayed in their upstream migration.

Juvenile OC coho salmon would be much too small to become wedged between bars or pickets, while adult coho salmon, on the other hand, would not be able to pass through the weir bars, and should be trapped within the collection box during passage. A few larger OC coho salmon jacks may be vulnerable to “gilling,” but ODFW did not observe any “gilling” and did not capture coho or chinook salmon jacks in the trap in 1998 or (pers. comm., Tom Loynes, ODFW, 7/25/00), so it is likely that most or all OC coho salmon jacks would also be small enough to pass through the bars and/or pickets safely.

While fish impingement due to debris accumulation is theoretically possible, this situation usually occurs in situations where the gap or mesh of a rack or screen is much smaller than that proposed for the Happy Valley trap. Also, the floating trap panels, with their shallow angle to the river surface and pivot, are designed to be self-cleaning: Most large debris would be forced along and over the weir pipes by the current, and any large accumulation would force the panels under the surface, where the force of the current on the further-decreased panel angle should force debris downstream. In addition, the trap would be sampled a minimum of twice a day so that ODFW staff would be able to clean all of the trap components on the same schedule.

The degree of OC coho migration delay that might be associated with the operation of the Happy Valley trap is unknown, although the first coho salmon was captured in the trap on October 12 of 1998 and the last day of operation was November 6 (pers. comm., Tom Loynes, ODFW, 7/26/00). Only 12 of 78 coho salmon were captured prior to October 26 in 1998, however, so it appears that substantially less than 1% of the wild OC coho salmon run could have been delayed by the trap more than about 12 days in that year. There is no reason to believe, however, that any individual coho salmon would experience a migration delay of greater than 12 hours caused by the presence of the proposed trap. ODFW noticed apparent reluctance of some chinook salmon to enter the shoreline trap entrance during low-flow operation in 1999, and so added the mid-channel trap entrance, which appeared to relieve the problem (pers. comm., Tom Loynes, ODFW, 7/26/00). The guidance channels that would be excavated by ODFW in 2000 and future years should further facilitate entrance into the trap, as should the relatively high flow levels that should occur during the latter portion of the trapping season. In addition, water quality conditions should be suitable for coho salmon in the South Umpqua River during the latter half of October (Hubbard *et al.* 1990-1993, Bell 1991) and OC coho salmon spawning would not likely occur until four weeks or longer following the removal of the trap. The NMFS therefore believes that any delay that might be experienced by individual OC coho salmon would likely be of minor duration and would have no effect on spawning success.

II. Trap construction. Sediment in the South Umpqua River will be mobilized (*i.e.*, transformed into turbidity) by the proposed action, particularly by the excavation and movement of alluvium within the river channel. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). The operation of heavy equipment requires the use of fuel and lubricants which, if spilled into the South Umpqua River, could injure or kill aquatic organisms and has some potential to directly adversely affect individual fish through mechanical injury. Finally, the excavation and manipulation of alluvium would physically modify fish habitat within the river channel through the creation of depressions and berms.

Juvenile OC coho salmon smolts outmigrate as smolts in the spring, before trap construction, while adult OC coho salmon would not be present at the site before late October, following construction, but rearing juvenile OC coho salmon are likely to occur in the South Umpqua River drainage year-around, and so would have some potential to be affected by turbidity, potential toxic contamination, and mechanical injury resulting from the in-channel trap construction. Manipulation of alluvium in the river channel would have the potential to affect fish habitat for as long as the modification to the channel exists.

Although turbidity has some potential to directly adversely affect fish, this usually occurs in situations where no relief from the turbidity is possible. Any juvenile OC coho salmon in proximity of the proposed activities should have the opportunity and mobility to avoid (laterally or upstream of) what should be minor and short-term turbidity plumes created by the proposed action. Because ODFW would use only clean and leak-free heavy equipment for the proposed excavation and alluvium manipulation, little or no contamination of the river should occur. Also, because the trap site would be a shallow riffle during the construction period, while deep, shaded pools are the typical preferred

summer rearing habitat for coho salmon (McMahon 1983), and because juvenile coho salmon are agile and alert creatures, mechanical injury to juvenile coho salmon would be unlikely.

Most importantly, however, and as noted above, water quality values in the lower mainstem of the South Umpqua River (particularly water temperature, dissolved oxygen, and pH) are likely to be substantially degraded during the proposed trap construction period (mid to late August). Tanner and Anderson (1996) found that state water quality standards for dissolved oxygen levels (90% of saturation) and (pH 8.5) were not met 90 to 100% of the time in August and September of 1993 (a relatively high-flow year) at a site about 12 miles downstream of the proposed project site. Water temperature at the water-quality monitoring site during the last 2 weeks of August 1993 varied from about 24° C to about 20° C, but reached highs of up to 28° C during the same period in 1991, a year of lower flow volume (Hubbard *et al.* 1990-1993). Mean water temperature at the same site during this period during 1990 through 1993 varied from about 22° C to about 24.5° C. The degraded water quality values present during trap construction would produce sub-optimal to lethal conditions for salmonids, including juvenile coho salmon (Bell 1991, McMahon 1983), and so it is likely that few or no individuals would be present in the South Umpqua River at the trap site.

Regarding manipulation of channel morphology, the proposed trap construction would occur during August, when the mean discharge at the Brockway gage (about 3 miles upstream from the trap site) is 139 cfs compared to the January mean discharge of 6,938 cfs (Hubbard *et al.* 1999). Because of the relatively small size of the alluvium that would be manipulated by ODFW (cobble and finer), any berms or channels created by the ODFW in August would be filled or eroded by high flows within a few weeks or months of the completion of the annual trapping season. River volume is likely to be at its annual minimum in late August (Hubbard *et al.* 1999) so receding flows should not pose a risk of stranding fish in excavated areas. As noted above, coho salmon typically spawn in South Umpqua River tributaries, rather than the mainstem, so the movement of substrate by ODFW is unlikely to affect spawning habitat, even in the short term.

B. Critical Habitat

As described in previous sections of this Opinion, ODFW's construction and operation of the Happy Valley trap may affect essential features of the OC coho salmon, but is unlikely to adversely affect this habitat in the long term.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the action area encompasses the area around the proposed project site at South Umpqua River mile 18.1. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes and are not

considered cumulative effects. NMFS knows of no non-Federal actions that are reasonably certain to occur within the action area that are likely to adversely affect listed salmonids.

CONCLUSION

The NMFS has determined that, based on the available information, the ODFW's construction and operation of the Happy Valley trap to capture fall chinook salmon is not likely to jeopardize the continued existence of OC coho salmon, nor will it result in the destruction or adverse modification of designated critical habitat of this species.

The NMFS reached this conclusion based on the following factors: (1) Instream and riparian habitat values would be maintained in the long term; (2) all substantial in-water work will be conducted during a period when few, if any, OC coho salmon would be present at the trap site; (3) only a small proportion of the OC coho salmon spawning population of the South Umpqua River drainage is likely to be affected by the operation of the trap; and (4) the effects of capture, holding and handling on the survival and spawning ability of individual adult OC coho salmon are likely to be small and insubstantial.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement (ITS) specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts, and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

The measures described below are non-discretionary. They must be implemented by the action agency so that they become binding conditions necessary in order for the exemption in Section 7(o)(2) to apply. The COE has a continuing duty to regulate the activity covered in this incidental take statement. If the COE fails to adhere to the terms and conditions of the incidental take statement, and/or fails to

retain the oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse.

Amount or Extent of the Take

Notwithstanding the NMFS' conclusion that the subject proposed project is not expected to jeopardize the continued existence of OC coho salmon, there may be short-term impacts and NMFS anticipates that there would be more than a negligible likelihood of incidental take of these species from some of the actions. The subject action, however, as described in this Opinion, is expected to result in a low level of incidental take of OC coho salmon in the proposed action area. The ODFW recorded the incidental capture of an annual average of about 70 adult OC coho salmon during the operation of a trap at Happy Valley in 1998 and 1999. Assuming this level of annual incidental capture continues through the proposed 5 year term of the consultation, about 350 OC coho salmon would be trapped, netted, and released by ODFW. The NMFS believes, however, that because of the proposed procedures proposed by ODFW, the capture, netting, and release of individual adult OC coho salmon would usually not harass or harm these animals to the extent that their survival or ability to breed would be significantly diminished. Although this low level of significant incidental take is difficult to quantify, the NMFS expects that no more than two adult OC coho salmon (roughly 3% of those captured) would be significantly harmed or harassed annually by the proposed action.

Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measure is necessary and appropriate to further minimize the likelihood of incidental take of the species covered by this Opinion.

1. As a condition of the permit, the COE shall require ODFW to take specific measures to minimize short-term effects on instream fish habitat.
2. As a condition of the permit, the COE shall require ODFW to take specific measures to minimize direct effects on individual OC coho salmon.

Terms and Conditions

To minimize the likelihood of incidental take of listed salmonid species which may result from proposed future actions, the COE shall implement the following terms and conditions. The individual projects covered by this Opinion must also comply with the terms and conditions of all required state, Federal, and local permits.

1. To minimize effects on instream habitat, ODFW will:
 - a. Comply with the conditions of the COE permit that would tend to eliminate or minimize the effects of turbidity, sedimentation, and toxic contamination.


2. To minimize effects on individual OC coho salmon ODFW will implement the following actions:
- a. After the capture of the first adult OC coho salmon in each trapping season, remove all adult salmonids from each holding area of the Happy Valley trap prior to accumulation of 20 adult salmonids in each holding area, or, if less than 20 adult salmonids accumulate in each holding area, remove fish from each holding areas a minimum of twice in each 24-hour period.
 - b. Cease annual trapping operations upon the achievement of a cumulative 50:50 or greater capture ratio of adult OC coho salmon to other adult salmonids for any 4 consecutive holding area sweeps, or upon capture of 10 or more adult OC coho salmon in any one holding area sweep.
 - c. Annually report to the NMFS, within 90 days of the completion of the trapping season, the number and timing of capture of any adult OC coho salmon.

Reinitiation of Consultation

Reinitiation of consultation is required if: (1) The amount or extent of taking specified in the incidental take statement, above, is exceeded; (2) the action is modified in a way that causes an effect on the listed species that was not previously considered in information provided by the COE and this Opinion; (3) new information or project monitoring reveals effects of the action that may affect listed species in a way not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR § 402.16).

If you have any questions, please contact Dan Kenney of my staff in the Oregon State Branch Office at (503) 231-6938.

Sincerely,


For: William Stelle, Jr.
Regional Administrator

REFERENCES

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the sources of data, information and references used in developing this Biological and Conference Opinion in addition to that submitted by the COE.

Bell, M.C. 1991. Fisheries handbook of engineering requirements and biological criteria. U.S. Army Corps of Engineers, North Pacific Division, Portland.

Hubbard, C.E., T.A. Herrett, R.L. Kraus, and C.G. Kroll. 1990. Water Resources Data, Oregon, Water Year 1990, Volume 2. Water-Data Report OR 90-2, U.S. Geological Survey, Portland, Oregon.

Hubbard, C.E., C.G. Kroll, T.A. Herrett, R.L. Kraus, and G.P. Ruppert. 1991. Water Resources Data, Oregon, Water Year 1991. Water-Data Report OR 91-1, U.S. Geological Survey, Portland, Oregon.

Hubbard, C.E., T.A. Herrett, R.L. Kraus, G.P. Ruppert, and M.L. Courts. 1992. Water Resources Data, Oregon, Water Year 1992. Water-Data Report OR 92-1, U.S. Geological Survey, Portland, Oregon.

Hubbard, C.E., T.A. Herrett, R.L. Kraus, G.P. Ruppert, and M.L. Courts. 1993. Water Resources Data, Oregon, Water Year 1993. Water-Data Report OR 93-1, U.S. Geological Survey, Portland, Oregon.

Hubbard, C.E., T.A. Herrett, J.E. Poole, G.P. Ruppert, and M.L. Courts. 1999. Water Resources Data, Oregon, Water Year 1999. Water-Data Report OR 99-1, U.S. Geological Survey, Portland, Oregon.

McMahon, T.E. 1983. Habitat suitability index models: Coho salmon. FWS/OBS-82/10.49, U.S. Fish and Wildlife Service, Fort Collins, Colorado.

Oregon Department of Fish and Wildlife (ODFW). 2000. Annual estimates of wild coho spawner abundance in coastal river basins within the Oregon Coastal ESU, 1990-99. ODFW World Wide Web site.

Spence, B.C., G.A. Lomnický, R.M. Hughes, and R.P. Novitzki. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon.

Tanner, D.Q. and C.W. Anderson. 1996. Assessment of water quality, nutrients, algal productivity, and management alternatives for low-flow conditions, South Umpqua River basin, Oregon

1990-92. Water-Resources Investigations Report 96-4082, U.S. Geological Survey, Portland, Oregon.

Wedemeyer, G.A., B.A. Barton, and D.J. McLeay. 1990. Stress and acclimation. Pages 451-490 in C.B. Schreck and P.B. Moyle, editors. Methods for fish biology. American Fisheries Society, Bethesda, Maryland.

Weitkamp, L.A., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington.